

**WHAT IS CLAIMED IS:**

Swbait 1. A method for modifying the rheology of a slurry of a mineral-containing solid material and water, wherein the mineral-containing solid material is nickel ore, cobalt ore, precious metals ore, copper ore, taconite, mineral sands, coal, bauxite or a mixture thereof, the method comprising adding to the slurry a low molecular weight sulfonate-containing polymer.

DL 2. The method of claim 1 wherein the polymer is selected from the group consisting of a sulfonate-containing polyacrylamide, a sulfonate-containing polyacrylic acid or a mixture thereof.

10 3. The method of claim 1 wherein the polymer comprises acrylamide or substituted acrylamide, acrylic acid or substituted acrylic acid, and a sulfonate functional group.

15 4. The method of claim 1 wherein the polymer comprises acrylamide, acrylic acid and acrylamidomethyl sulfonate.

5. The method of claim 1 wherein the polymer is further characterized as having a molecular weight ranging from about 2,000 to about 20,000.

20 6. The method of claim 1 wherein the polymer is further characterized as comprising from about 3 to about 40 mole% acrylamidomethyl sulfonate, from about 5 to about 45 mole% acrylamide and from about 30 to about 70 mole% acrylic acid.

7. The method of claim 1 wherein the polymer is further characterized as comprising from about 5 to about 10 mole% acrylamidomethyl sulfonate, from about 30 to about 40 mole% acrylamide and from about 55 to about 65 mole% acrylic acid.

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